

***In the Claims***

A marked up version of the amended claims can be found in *Appendix D*.

*Please cancel claim 7.*

Please amend claims 1, 11, and 25 as follows:

*A5*

1. (Amended) An apparatus for detecting the presence of suitable crystalline material in its in-situ growth environment, comprising:

a crystal growing incubator having opposing first and second sides;

an X-ray system, comprising:

an X-ray source disposed adjacent to said first side of said crystal growing incubator, where said X-ray source is configured to irradiate crystalline material grown in said crystal growing incubator; and

an X-ray detector disposed adjacent to said second side of said crystal growing incubator, where said X-ray detector is configured to detect the presence of diffracted X-rays from crystalline material grown in said crystal growing incubator; and

such that in use, crystalline material grown in said incubator can be identified and screened for suitability by said X-ray system, thereby, facilitating the increased reproducibility of successful crystal growth experiments.

*A10*

11. (Amended) A method of screening for suitable crystalline material in its in-situ growth environment, said method comprising the steps of:

identifying crystalline material in its in-situ growth environment;

irradiating crystalline material in said in-situ growth environment with an X-ray beam;

detecting a diffraction pattern from said crystalline material; and

screening said crystalline material for suitability based on said diffraction pattern.

*X1*  
25. (Amended) A method of screening for suitable crystalline material in its in-situ growth environment, said method comprising the steps of:

growing crystalline material in a crystal growing incubator;  
placing said crystal growing incubator into a positioner;  
determining the presence of said crystalline material in said crystal growing incubator;  
ascertaining the location of said crystalline material in said crystal growing incubator;  
storing the location of said crystalline material;  
positioning said crystal growing incubator and an X-ray source relative to each another based on the location of said crystalline material, such that an X-ray beam emitted from said X-ray source accurately aligns with said crystalline material;  
irradiating said crystalline material with said X-ray beam;  
detecting with a X-ray detector, a diffraction pattern from said crystalline material; and  
screening said crystalline material for suitability based on said diffraction pattern.

Please add the following claims:

*AS*  
32. (New) The apparatus of claim 1, wherein said X-ray detector comprises a CCD camera comprising a phosphor screen.

33. (New) The apparatus of claim 32, wherein said phosphor screen achieves at least 4 to 8 line-pairs per millimeter resolution.

34. (New) An apparatus for detecting the presence of crystalline material in its in-situ growth environment, comprising:

a crystal growing incubator having opposing first and second sides, where the crystal growing incubator includes an array of crystal growth environments;  
an X-ray system, comprising:

*AS*

an X-ray source disposed adjacent to said first side of said crystal growing incubator, where said X-ray source is configured to irradiate crystalline material grown in said crystal growing incubator; and

an X-ray detector disposed adjacent to said second side of said crystal growing incubator, where said X-ray detector is configured to detect the presence of diffracted X-rays from crystalline material grown in said crystal growing incubator;

a positioner configured to sequentially align each of said crystal growth environments and said X-ray system with one another; and

such that in use, crystalline material grown in said incubator can be screened for suitability by said X-ray system, thereby, facilitating the increased reproducibility of successful crystal growth experiments.

35. (New) The apparatus of claim 34, further comprising an imaging system disposed adjacent to said crystal growing incubator, where said imaging system detects the presence and location of crystals grown in said incubator, such that in use an X-ray beam emanating from said X-ray source is accurately aligned with crystals detected by said imaging system.

36. (New) The apparatus of claim 34, wherein said X-ray detector is selected from a group consisting of: a charged coupled device (CCD) camera and an imaging plate system.

37. (New) The apparatus of claim 34, wherein said X-ray detector comprises a CCD camera comprising a phosphor screen.

38. (New) The apparatus of claim 37, wherein said phosphor screen achieves at least 4 to 8 line-pairs per millimeter resolution.

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